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Description

Method for converting a three-party telecommunications connection which is switched via the public
5 communications network into a two-party telecommunications connection

The invention relates to a method for converting a three-party telecommunications connection, which is
10 switched via a public communications network, between two subscriber lines and a further subscriber line or between two subscriber lines and an operator's position, into a two-party telecommunications connection between the two aforesaid subscriber lines
15 according to the preamble of patent claim 1. The three-party telecommunications connection is routed here via the telecommunications switching office to which the further subscriber line or the operator's position is connected.

20 The conversion of a three-party telecommunications connection into a two-party telecommunications connection is carried out in a known fashion by releasing the section of the three-party
25 telecommunications connection between the further subscriber line or the operator's position and its telecommunications switching office. The known method is applied, for example, in the case in which a subscriber of the telecommunications network, for
30 example a customer of a bank, wishes to set up a connection to an employee of a bank at a bank branch. The connection setup to the employee of the bank is processed, for example, as follows:

35 The customer of the bank sets up a connection from his subscriber terminal to his local switching office, for example in Munich. From this local switching office, a connection is switched to a further telecommunications switching office, for example in Hamburg, on the basis

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of a call divert which is set up in the local switching office, a plurality of operators's positions, for example of a call center, being connected to said further telecommunications switching office. The
5 connection is finally switched from the telecommunications switching office in Hamburg to an operator's position.

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A switching operator at the operator's position then searches for the call number of the employee of the bank requested by the customer of the bank and initiates a connection setup from the telecommunications switching office in Hamburg to the same local switching office in Munich or to another local switching office to which the individual subscriber lines of the employees of the bank are connected. From this local switching office, the connection is finally switched through to the requested employee of the bank. After a successful connection setup from the customer of the bank to the requested employee of the bank, the switching operator brings about the conversion into a two-party telecommunications connection, the operator's position being released from the connection.

The known method is also applied to the case of a multiparty service. For this purpose, the customer of the bank calls, for example, an employee of the bank at a banking service center in Hamburg. This employee of the bank then establishes a three-party multiparty service connection to a further employee of a bank branch, for example in Munich. After a certain period of time during the call, the employee of the banking service center is released from the three-party multiparty service connection, and in his local switching office in Hamburg he brings about the interconnection of the section of the connection between the customer of the bank and the telecommunications switching office in Hamburg and the section of the connection between the telecommunications switching office in Hamburg and the employee of the bank branch in Munich. In this way, a two-party connection is maintained between the customer of the bank and the employee of the bank branch in Munich.

In the known method, there is however the disadvantage

for the bank that when there is a call divert to an operator's station, for example in Hamburg, the bank has to pay for the existing telecommunications connection between the local switching office in Munich
5 and the telecommunications switching office in Hamburg despite the fact that once the operator's position has been released from the three-party connection there is then only a call connection to the employee

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at the Munich branch of the bank. If there is a call transfer by the employee of the banking service center, the customer of the bank has to pay the tolls for the long-distance connections between his local switching office and the telecommunications switching office in Hamburg as well as between the remote switching office in Hamburg and the local switching office, for example in Munich, which is responsible for the bank branch.

10 Furthermore, additional resources, for example in the form of channel assignments on the connection lines and/or for the switching operation, in the telecommunications switching office itself are used up for the long-distance connections via the telecommunications switching office in Hamburg.

A method for carrying out a connection setup for a call diversion or connection forwarding in a communications network is already known (DE 196 53 622 A1). Here, when there is a call from a subscriber's station of a first communications system to a subscriber's station which is assigned to a second communications system and for which a call diversion or at which a call forwarding to a subscriber's station of a third communications system is set up or brought about, a connection to the third communications system is firstly set up via the second communications system. An equivalent path inquiry is then transmitted from this third communications system to the calling, first communications system, in response to which said first communications system determines an alternative connection path (bypassing the second communications system) and causes the third communications system to change over to the alternative connection path. However, such a procedure is not readily suitable for converting the three-party telecommunications connection described above into a

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two-party telecommunications connection.

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The object of the invention is then to configure a method of the type mentioned at the beginning to the effect that the disadvantages explained above are eliminated.

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This object is achieved by means of the features specified in the characterizing part of claim 1. Further embodiments of the invention are characterized in subclaims.

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The principle of the invention consists in the fact that the telecommunications switching office via which the three-party telecommunications connection between the two subscriber lines, for example the subscriber line of the customer of the bank mentioned at the beginning and the subscriber line of the employee of the bank mentioned at the beginning in the bank branch, and a further subscriber line, for example of the employee of the bank in the banking service center, or an operator's position, for example of a call center, is set up, receives a request from the further subscriber line or from the operator's position and in response initiates the setting up of a new direct telecommunications connection between the two aforesaid subscriber lines (for example customer of a bank and employee of a bank in the bank branch) by virtue of the fact that the telecommunications switching office which is connected to the further subscriber line or the operator's position requests the one switching office, or one of the two switching offices, to which the two aforesaid subscriber lines are connected to set up the new telecommunications connection in accordance with a selection which is made as a function of the tariff model which forms the basis of the billing system. Furthermore, after the direct telecommunications connection has been successfully set up, the existing

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sections of the three-party telecommunications connection between these two subscriber lines and the further subscriber line or the operator's position are released. In this way, the subscribers can determine
5 whether the originally calling subscriber pays the tolls for the new direct subscriber connection or whether the originally called subscriber pays the tolls for the new direct telecommunications

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connection which is then set up from his telecommunications switching office.

Accordingly, a saving is made in resources, for example
5 in the form of channel assignments upon transmission
lines and/or for switching operations, in the
telecommunications switching office to which the
further subscriber or the operator's position is
connected.

10 For the subscriber, for example the bank mentioned at
the beginning, which makes use of the switching service
by means of an operator's position, for example a call
center, and for the calling subscriber in the case of
15 the aforesaid three-party multiparty service
connection, there is the welcome benefit that after the
conversion of the three-party telecommunications
connection into the two-party telecommunications
connection both of them only have to pay the tolls for
20 the direct telecommunications connection to the called
subscriber.

One development of the invention discloses an
alternative insofar as the two subscriber lines between
25 which a new direct telecommunications connection is set
up are connected to a common telecommunications
switching office. Here, the new direct
telecommunications connection must merely be switched
in the common telecommunications switching office.
30 Moreover, the calling subscriber, or the subscriber
making use of the switching service, only pays tolls at
the local rate in this case.

According to one development of the invention, the
35 telecommunications switching office which is requested
to set up the new telecommunications connection

receives a uniquely defined ringing signal and/or the call number of the second subscriber line from the telecommunications switching office which accepts the new telecommunications connection and to which the
5 second called subscriber line of the two aforesaid subscriber lines is connected. The new direct telecommunications connection is thus uniquely identified before the connection setup, as a result of which a correct useful channel switch-over is also
10 ensured in the telecommunications switching office which initiates the new telecommunications connection and in the telecommunications switching office which accepts the new telecommunications connection. Moreover, this permits the correct call number of the
15 called subscriber of the two-party telecommunications connection to be indicated in the subscriber terminal of the calling subscriber.

An exemplary embodiment of the invention will be
20 explained in more detail below with reference to a drawing.

The figure shows an exemplary flow chart relating to the method according to the invention, in which:

25 A telecommunications switching office VST A, a telecommunications switching office VST B and a telecommunications switching office VST C are illustrated.

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The subscriber line of the calling subscriber, for example of the customer of a bank, is to be imagined as being connected to the telecommunications switching office VST A, and the subscriber line of the called subscriber, for example of the employee of the bank branch, is to be imaged as being connected to the telecommunications switching office VST C. A further subscriber line of a subscriber, for example of the employee of the bank in the banking service center, or an operator's position, for example of a call center, are also to be imagined as being connected to the telecommunications switching office VST B.

It will be assumed that there is an active three-party telecommunications connection between the subscriber line of the telecommunications switching office VST A, the subscriber line or the operator's position of the telecommunications switching office VST B and the subscriber line of the telecommunications switching office VST C. The feature of the conversion of the three-party telecommunications connection into a two-party telecommunications connection is then activated by means of a message FAC1 (FAC = feature activation) in the switching office VST B. The telecommunications switching office VST B then informs the telecommunications switching office VST C, by means of the message FAC2, that the conversion of the three-party telecommunications connection has been activated. In this case, the subscriber whose subscriber line is connected to the telecommunications switching office VST A pays the toll for the direct telecommunications connection which is to be newly set up between the telecommunications switching offices VST A and VST C.

If the subscriber whose subscriber line is connected to the telecommunications switching office VST C is to pay the toll, the telecommunications switching office VST A can be informed about the conversion by means of FAC2.

The following sequence of the method according to the invention is then to be imagined as if the references VST A and VST C were interchanged in the figure.

- 5 The telecommunications switching office VST C transmits, in the message FAC3, a uniquely defined ringing signal, together with the call number of the subscriber line connected to it,

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to the telecommunications switching office VST B which forwards to the telecommunications switching office VST A a request message FAC4 to set up a new direct telecommunications connection by reference to the transferred call number relating to the telecommunications switching office VST C, said request message FAC4 containing the ringing signal and the call number. The receipt of the message FAC4 is confirmed by the telecommunications switching office VST A by the message FAC5 to the telecommunications switching office VST B. The setup of the new telecommunications connection is signaled to the telecommunications switching office VST C by means of the message IAM (Initial Address Message). This message also contains the ringing signal allocated by the telecommunications switching office VST C. In the telecommunications switching office VST C, the ringing signal transferred in the message IAM is now compared with the ringing signals of all the connections which have been activated in the telecommunications switching office VST C. After the section of the connection between the telecommunications switching office VST B and the subscriber line or operator's position connected to the telecommunications switching office VST C has been determined, the telecommunications switching office VST C responds with the message ANM (Answer Message) to the telecommunications switching office VST A.

If the telecommunications switching office VST C was not able to find a connection with an identical ringing signal, the procedure for setting up the new direct telecommunications connection to the telecommunications switching office VST C is aborted.

As soon as the telecommunications switching office VST A has received the message ANM, the new direct telecommunications connection is switched through to the telecommunications switching office VST C. At the same time, the user channel of the active section of

the connection between the subscriber line connected to the telecommunications switching office VST A and the telecommunications switching office VST A, and the user channel of the active section of the connection between

5 the subscriber line connected to the telecommunications switching office VST C and the telecommunications switching office VST C are respectively connected to the user channel of the newly set-up

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telecommunications connection. The section of the connection to the telecommunications switching office VST B is then released from the telecommunications switching office VST A, and the section of the connection to the telecommunications switching office VST B is then released from the telecommunications switching office VST C, and the assigned resources are thus made available. The release of the section of the connection between the telecommunications switching office VST B and the subscriber line connected to this telecommunications switching office is then also initiated by means of the message DISC.

If the setup of the new direct telecommunications connection fails in the method owing to a fault, the existing sections of the connections between the telecommunications switching office VST A and the telecommunications switching office VST B as well as those between the telecommunications switching office VST B and the telecommunications switching office VST C are maintained, connected together in the telecommunications switching office VST B and only the section of the connection between the telecommunications switching office VST B and its subscriber line is released.

If the telecommunications switching offices VST A and VST C are combined in one telecommunications switching office, the method operates similarly to the manner described above. The connection setup of the new direct telecommunications connection is then not carried out between the telecommunications switching offices VST A and VST C but rather processed internally in the single telecommunications switching office and the user channels of the sections of the connections to the two subscriber lines connected to this telecommunications switching office are connected together internally.

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